DOCUMENT RESUME

ED 232 522 HE 016 416

AUTHOR Beers, Susan E.; Bloomingdale, John R., Jr.
TITLE Epistemological and Instructional Assumptions of College Teachers.
PUB DATE Apr 83
NOTE 16p.; Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Canada, April 11-15, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Style; *College Faculty; *Course Objectives; *Epistemology; Higher Education; Schemata (Cognition); *Student Problems; *Teacher Attitudes

ABSTRACT

Teachers' views of education, their students, and their disciplines were assessed based on interviews with 20 faculty members from a small liberal arts college. The interviews were content analyzed, and the relationships between epistemological beliefs, course objectives, and views of student difficulties (e.g., skill deficiencies, personality) were examined. Interview protocols were coded by two rates, and the epistemological assumptions were categorized, following the Perry scheme, as dualistic, multiplistic, relativistic, or committed. Educational objectives were coded as knowledge of facts, comprehension, application, analysis, synthesis, or evaluation. Disciplinary division was found to be related to educational objectives, while epistemological assumptions were found to be related to perceptions of student difficulty. Teachers attributions of the causes for student difficulties were as follows: effort (30 percent), personality characteristics (30 percent), talent (40 percent), study skills (55 percent), and concreteness (45 percent). Teachers who viewed the world in terms of absolute truths, attributed the difficulties of their students to the relatively stable causes of talent and personality. (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Epistemological and Instructional Assumptions of College Teachers

Susan E. Beers

John R. Bloomingdale, Jr.

Vassar College

ED232522

Paper presented at the meeting of the American Educational Research Association

Montreal, Canada, April, 1983

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Susan E. Beers

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

HE 016 416

Abstract

A sample of faculty from a small liberal arts college were interviewed in order to describe the epistemological assumptions of college teachers, and to explore the relationships between these assumptions and a)the goals college teachers set for their students and b) the difficulties they perceive students as having in their courses. Interview protocols were coded by two raters. Epistemological assumptions were categorized, following the Perry Scheme, as dualistic, multiplistic, relativistic, or committed. Educational objectives were coded as knowledge of facts, comprehension, application, analysis, synthesis, or evaluation. Student difficulties were categorized as effort, personality characteristics, skills deficiencies, talent or "concreteness" (defined as dualistic thinking). Disciplinary division was found to be related to educational objectives, while epistemological assumptions were found to be related to perceptions of student difficulty. Limitations of the study are discussed.

Epistemological and Instructional Assumptions of College Teachers

Susan E. Beers

John R. Bloomingdale, Jr.

Vassar College

Since the publication of Perry's Intellectual and Ethical Development in the College Years (1970) a good deal of research has focused on students' conceptions of knowledge, and the implications of these conceptions for educational practice (c.f., Perry, 1981). The epistemological assumptions of college teachers have not been examined in such detail, however. While the greater educational experience of teachers implies that they would hold more sophisticated conceptions of knowledge than their students, one would also expect that there would be some variation between teachers and disciplines in this regard. Do teachers exhibit the same range of epistemological beliefs that Perry describes students as holding? Is there a relationship between such epistemological beliefs and the objectives they set for their students? Are the difficulties they perceive their students as experiencing in their courses related to teachers' epistemological beliefs?

The present study was conducted to examine the above issues. Faculty from a small liberal arts college were interviewed about their views of education, their students, and their disciplines. These interviews were then subjected to content analysis and the relationships between epistemological beliefs, course objectives, and views of student difficulties were examined. This last variable was chosen for examination because different attributions for student

---

Comments concerning this paper should be directed to Dr. Susan E. Beers, Department of Psychology, Sweet Briar College, Sweet Briar, Virginia, 24595. The authors would like to thank Dr. Robert T. Blackburn for his comments on an earlier draft of this paper.

performance (c.f. Weiner, Frieze, Kukla, Reed, Rest and Rosenbaum, 1971) have differing implications for teaching. The teacher who attributes a student's poor performance to talent or intelligence, for example, might feel that there is little he or she can do to influence the student's learning, while the teacher who attributes a student's performance to specific skills deficiencies might be relatively more optimistic about having an influence on the student's aquisition of knowledge.

On the basis of interviews he conducted with students over the course of their college careers, Perry (1970) formulated a descriptive scheme of the intellectual development of college students. Briefly stated, the least intellectually mature students are described as Dualistic. They believe that knowledge consists of absolute truths which are transmitted by authorities such as teachers. Dualism evolves into Multiplicity as multiple visions of reality are perceived. At first these multiple views are considered to be intellectual exercises presented to the student by teachers who themselves know the absolute truth, or as options in areas where the absolute truth has yet to be discovered. Later absolute truth is itself questioned, and students may come to the conclusion that all opinions are equally valid. As Multiplicity develops into Relativism, multiple points of view are perceived as related to their evidential bases. Thus, not all versions of truth are seen as equally meritorious. This sets the stage for Commitment, in which the student perceives the necessity of making a personal choice between competing visions of reality. These four major positions, and the transitional stages between them, make up the nine positions in Perry's developmental scheme.

The development of conceptions of knowledge does not occur in a vacuum. Rather, college life provides the environmental context in which maturation will occur, by exposing the student to a variety of perspectives which differ from his or her own. According to Perry, in responding to the heterogeneity of others' experience, the student comes to restructure his or her own ethical beliefs and conceptions of knowledge. While interactions with teachers both within and outside of the classroom situation is only a part of the broader context of college life to which the student is exposed, it is a significant one. Teachers represent authority figures, and the nature of authority is hypothesized by Perry to be a central issue in the development of epistemological beliefs. Teachers also may serve as models for sophisticated beliefs concerning the nature of knowledge.

In summary, the epistemological development of students during the course of their college careers is likely to be influenced by their exposure to their teachers' conceptions of knowledge, particularly if those conceptions are translated into practise within the college classroom. Copes (note 1) has suggested that relativism can be explicitly taught within the context of mathematics classes by the use of particular teaching strategies. Even when a teacher does not articulate the development of a particular epistemological belief system as an explicit educational objective, that belief system may be implicit in course objectives and classroom activities, e.g., revealed through tests, assignments and grades.

In general, the integration of conceptions of knowledge with course activities may be viewed as mediated by both the organization of course content within a discipline and by assumptions concerning instruction (e.g., the teacher's conception of the capabilities of students, the causes of student success and failure, and appropriate educational activities). The purpose of

the present study is to explore the interrelationships among these three components of educational practice. Specifically, the project had the following objectives: 1) to enumerate the epistemological assumptions of college teachers, and 2) to examine the relationships between these assumptions and a)the goals college teachers set for their students b) the difficulties they perceive students as having in their courses.

Method

Subjects. Twenty faculty members from a small liberal arts college (total faculty approximately 200) participated in this study. Eleven participants were male, nine female. Nine participants were tenured; eleven were untenured. Experience with teaching ranged from two to twenty-five years. Seven participants taught disciplines within the natural sciences (biology, chemistry, physics, mathematics, biopsychology, geology, geography), six taught disciplines within the social sciences (sociology, economics, political science, history, anthropology), and seven taught disciplines within the humanities (philosophy, english studies, french, hispanic studies).

Procedure. Participants volunteered to take part in a study of "teachers' views about education" in response to a mail solicitation sent to faculty members on campus during the summer months. The first author conducted an interview with each participant. The interview included open-ended questions designed to tap teachers' views concerning what constitutes knowledge (e.g.,How do you feel your discipline differs from others? Does your discipline make progress?), their general objectives for their courses (e.g., What do you want students most to "get out of" the courses that you teach?); and their perceptions of what difficulties students have performing well in their courses. Each interview lasted approximately one hour. All interviews were tape recorded and transcribed.

Results

Coding criteria and descriptive statistics. Epistemological assumptions were coded in one of four categories described by Perry (1970): Dualism (knowledge is viewed as consisting of absolute truths which are transmitted by authorities); Multiplicity (multiple versions of reality are perceived, but are either seen to exist in areas where absolute truth is yet to be discovered, or are perceived as equally valid): Relativism (alternative versions of reality are perceived as related to evidential bases); Commitment (the choice between alternative versions of reality is seen as a personal commitment). Agreement between two independent raters for the coding of interview protocols with respect to epistemological assumptions was 75%. Coding for the five protocols on which there was disagreement was determined by the two raters in consultation with each other. The percentage of faculty expressing beliefs that were scored in each of the four categories of epistemological assumptions were as follows: Dualism, 10%; Multiplicity, 30%; Relativism, 45%; commitment, 15%.

When asked what they most wanted students to "get out of" their classes, 30% of the faculty who were interviewed mentioned aesthetic or affective goals, e.g., a lifelong love of reading, an appreciation of the world around them. All also mentioned cognitive goals; these were coded in with respect to the most complex objective the interviewee mentioned in terms of the six categories in Bloom's (1956) taxonomy of educational objectives. Bloom's taxonomy is an intuitively plausible statement of the various levels of knowledge which serve as the goals for the educational process. The levels are assumed to be hierarchically ordered, each subsequent level requiring the skills and information attained at the previous levels. From the most basic to the most sophisticated, the educational objectives are: knowledge of facts, comprehension, application, analysis, synthesis and evaluation. By and large,

teachers tend to agree with the hierarchical nature of this taxonomy, with the exception that evaluation may be perceived as preceeding synthesis (Kunen, Cohen and Solman, 1981). For the coding of educational objectives, there was 85% agreement between two independent raters; differences were resolved by discussion between the raters. The percentage of faculty mentioning each of the objectives (scored in terms of the highest level of objective mentioned) were as follows: knowledge of facts, 0%, comprehension, 5%; application, 20%; analysis, 30%; synthesis, 30%, and evaluation, 15%.

Attributions for student difficulties were coded in five categories: effort, personality characteristics, talent, study skills (e.g. writing difficulties), and concreteness. This last category included those responses that indicated that the interviewees considered Dualistic thinking as a cause of their students' difficulties with course material. There was 85% agreement between two independent raters for the coding of these responses; differences were resolved by discussion. The proportion of interviewed faculty attributing student difficulties to each of the above causes was as follows: effort, 30; personality characteristics, 30%; talent, 40%; study skills, 55%; and concreteness, 45%.

Relationships between epistemological assumptions, course objectives and attributions for poor student performance. The small number of participants in this study necessitated collapsing data over coding categories in order to assess the relationships between the variables of interest. Because Perry (1970) considers the transition between multiplicity and relativism to be the major revolution in students' conceptions of knowledge, the analyses to be reported here initially collapsed the responses of interviewees categorized as holding dualistic or multiplistic views together, contrasting them with interviewees who were categorized as holding relativistic or committed

epistemological beliefs. Course objectives were also collapsed into two categories: the three lowest objectives in Bloom's taxonomy, knowledge, comprehension and application, were combined into one category and contrasted with a second category comprised of the objectives of analysis, synthesis, and evaluation.

After the above transformations, the relationships between disciplinary divisions, epistemological beliefs, and instructional objectives were examined by means of the Fisher Exact Test. No significant relationships were obtained between instructional objectives and epistemological beliefs, nor between epistemological beliefs and disciplinary divisions. There was a significant relationship between disciplinary division and instructional objectives, however, Fisher Exact Test = .001. While 100% of the faculty interviewed in the social sciences and humanities mentioned instructional objectives classified as analysis, synthesis or evaluation, only 28.6% of the interviewed faculty in the natural sciences mentioned these "higher level" instructional objectives.

The causes attributed for student problems were analysed in three categories. Responses which indicated that the interviewee attributed student difficulties to talent or personality characteristics were combined because these are theoretically relatively stable attributes of the student, ones which a teacher might not expect to be able to influence. Responses which indicated that the interviewee attributed student difficulties to effort or skills deficiencies were combined because each of these are variables that a teacher might reasonably expect to influence. Attributions to "concreteness", defined as the inferred desire of students for absolute truths, were analysed in a separate category because of their theoretical relevance to Perry's (1970) scheme.

Neither disciplinary division nor instructional objectives were found to be related to attributions for student difficulties. Epistemological beliefs, however, were found to be related to attributions to talent or personality characteristics, Fisher Exact Test = .05. Of the interviewees categorized as holding dualistic or multiplistic beliefs, 87.5% mentioned talent or personality characteristics as sources of student difficulties, while only 41.7% of the interviewees categorized as holding relativistic or committed epistemological beliefs did so.

Inspection of the data suggested one further relationship that was confirmed by statistical analysis. For the purposes of this analysis interviewees categorized as holding dualistic or committed epistemological beliefs were contrasted with those holding multiplistic or relativistic beliefs on the attribution of student difficulty to concreteness. While 60% of the subjects categorized as holding multiplistic or relativistic beliefs mentioned this cause of student difficulties, none of the subjects categorized as holding dualistic or committed epistemological beliefs did so, Fisher Exact Test = .03.

In summary, while disciplinary divisions were found to be related to instructional objectives, epistemological beliefs were found to be related to causal attributions for poor student performance.

Discussion

The above results suggest that the epistemological beliefs of teachers may be viewed as a part of a larger belief system which includes their attributions for student difficulties. Teachers who adopt the realistic (Rychlak, 1968) orientation inherent in the epistemological assumptions of Dualism and Multiplicity, i.e. who view the world in terms of absolute truths, attribute the difficulties of their students to the relatively stable causes of talent and

personality. Neither of these causes mandates action on the part of the teacher; one cannot hope to influence such stable characteristics of one's students. The teachers who mentioned such causes often expressed dismay with the implications of their attributions. As one teacher said, "There's just nothing I can do for them." One would not want to deny that talent and personality may indeed influence a student's academic performance. However, to the extent that such attributions are associated with teachers' epistemological beliefs rather than students' characteristics, teachers may "give up" on students too soon.

The relationship that was noted between the epistemological beliefs of teachers and their characterization of concreteness as a problem of their students is intriguing. The specific descriptions of students that were coded as concreteness varied with content areas. A teacher of literature, for example, mentioned that students had the misconception that books were "consumables", while a teacher of biology directly stated that "the top problem is that they have been somehow trained to think that when you take a science course you're supposed to memorize the facts." Teachers expressing epistemological beliefs coded as committed or dualistic did not mention concreteness, while over half of the teachers expressing epistemological beliefs coded as multiplistic or relativistic did so. It seems reasonable that teachers holding dualistic conceptions of knowledge would not characterize dualistic thinking in their students as a source of student difficulties, but why would teachers holding committed epistemological beliefs also fail to mention concreteness? Two possible explanations will be advanced. First, it may be that dualistic thinking is simply irrelevant for teachers whose own views have gone beyond relativism to commitment. Another possibility is that when a teacher's committed point of view is presented to students who hold themselves

hold dualistic or multiplistic views of knowledge, the teacher's commitment may be taken as the student's "fact". Teachers might have difficulty recognizing dualistic thinking when the content of that thought supports their own point of view.

While the study did not find a relationship between epistemological beliefs and course objectives, a relationship was obtained between discipline and course objectives such that "lower objectives" were set in the natural sciences than the social sciences and humanities. Such a relationship is not surprising; the cumulative nature of the content of the natural sciences is more apparent than that in the social sciences and humanities. Disciplinary content may thus constrain the instructional objectives that teacher set for their students.

Disciplinary content is thus related to course objectives while conceptions of knowledge per se may not be. The possibility of a dissociation between epistemological assumptions and instructional objectives is unfortunate, as college courses may be seen as directly influencing students' conceptions of knowledge. Teachers may influence the epistemological assumptions of students via their role as evaluators of learning. Unsuccessful learning outcomes may cause the student to rethink "what the teacher wants", and thus to alter epistemological beliefs. Similarly, successful outcomes may confirm both the study strategies and the epistemological beliefs of students. To the extent that teachers' epistemological assumptions are not integrated with course content and objectives, there is the possibility that students' conceptions of knowledge which the teacher would consider as inappropriate will be developed or confirmed.

The above discussion must be taken as speculative given the exploratory nature of the present study. In particular, sampling problems inherent in the study may limit the conclusions that may be drawn from the above results. While faculty from a wide range of disciplines were interviewed, the total sample size was small, thus necessitating the combination of categories of the variables of interest for the purposes of statistical analyses. In doing so, information potentially relevant to the relationship between epistemological beliefs, instructional objectives and attributions for student performance may have been lost. Secondly, all faculty were from the same small liberal arts institution. The admissions criteria of that institution, institutional policies concerning technical features of teaching such as class size, and institutional philosophy concerning education may have all served to shape the perceptions of this particular faculty. Thus, while it is likely that the results of this study might generalize to faculty in other small liberal arts colleges, differing results might have been obtained at a other institutions.

In summary, the study herein reported represents an initial effort at describing the interrelationships between theoretically significant aspects of teachers' roles in the educational process. Further research is needed to refine and extend the relationships which this study has suggested.

Reference Note

1. Copes, L. College Teaching, Mathematics, and the Perry Development Scheme. Unpublished paper, Institute for Studies in Educational Mathematics, St. Paul, Minn., 1980.

References

Bloom, B. S. Taxonomy of educational objectives: Handbook I: Cognitive domain. New York: McKay, 1956.

Kunen, S., Cohen, R., and Solman, R. A levels of processing analysis of Bloom's taxonomy. Journal of Educational Psychology, 1981, 73, 202-211.

Perry, W. G. Jr. Forms of intellectual and ethical development in the college years: A scheme. New York: Holt, Rinehart and Winston, 1970.

__. Cognitive and ethical growth: The making of meaning. A. W. Chickering (Ed.), The modern american college. San Francisco: Jossey-Bass, 1981.

Rychlak, J. F. A philosophy of science for personality theory. Boston: Houghton Mifflin, 1968.

Weiner, B., Frieze, I., Kukla, A., Reed, L., Rest, S., and Rosenbaum, R. Perceiving the causes of success and failure. Morristown, New Jersey: General Learning Press, 1971.